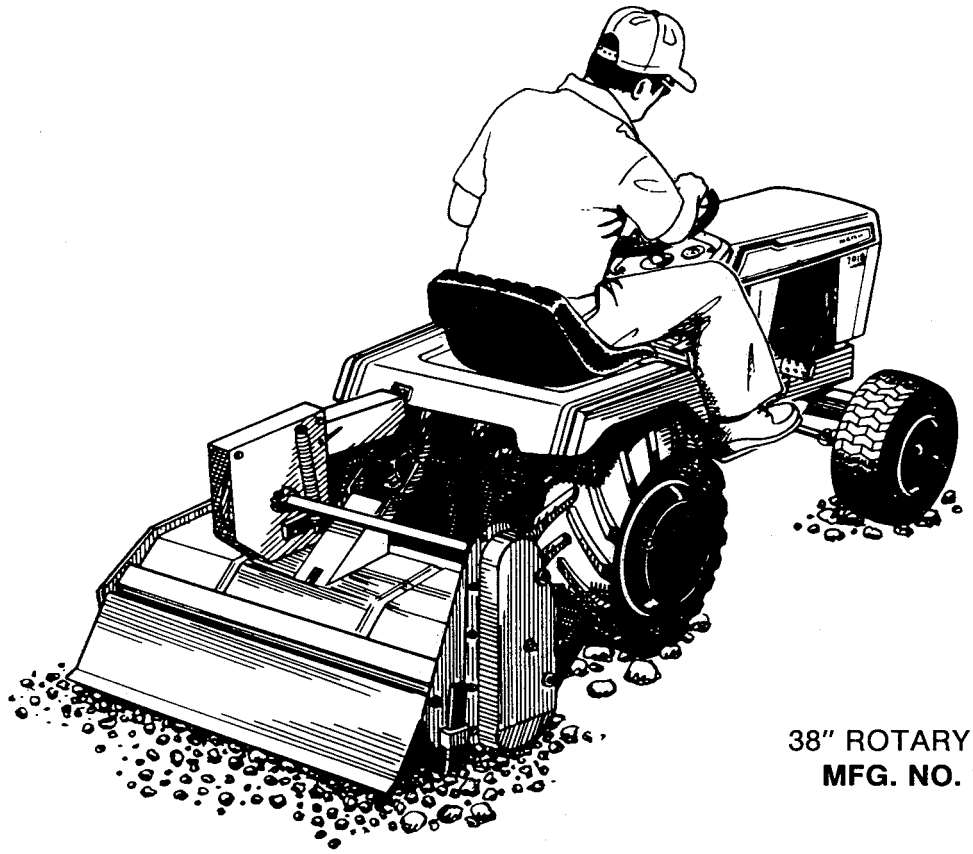
OPERATOR'S MANUAL

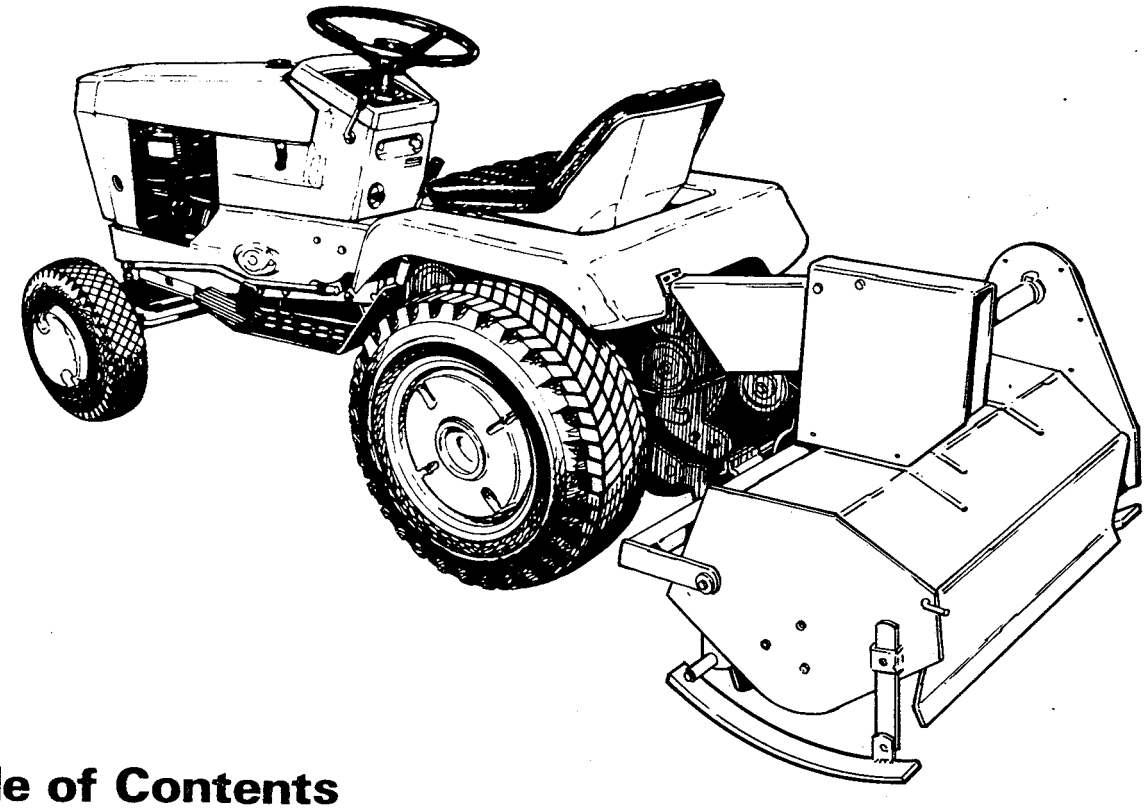
HEAVY DUTY 38" TILLER



38" ROTARY TILLER
MFG. NO. 1690287

FORM - 1657410
PRINTED IN U.S.A.
821

38 Inch Heavy Duty Rotary Tiller



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WARNING

Read these safety rules and follow them closely. Failure to obey these rules could result in loss of control of vehicle, severe personal injury to yourself or bystanders, or damage to property or equipment affecting safety.

Safety Rules

This notation preceding Cautions and Warnings in the text signifies important precautionary steps which, if not properly followed, could result in personal injury or damage to your equipment affecting safety.

General

- Read the operator's manual carefully. Be thoroughly familiar with the controls and proper use of the equipment. Know how to stop the unit and disengage the controls quickly.
- Never allow children to operate equipment. Never allow adults to operate equipment without proper instructions.
- Keep the area of operation clear of all persons, especially small children, and pets.
- Use only attachments or accessories designed for your machine. See your dealer for a complete list of recommended attachments or accessories.

Preparation

- Make sure:
  a. Tractor and attachments are in good operating condition,
  b. All safety devices and shields are in place and in good working condition, and
  c. All adjustments have been made.
- Handle gasoline with care – it is highly flammable.
  a. Use approved gasoline container.
  b. Never remove the cap of the fuel tank or add gasoline to a running or hot engine, or fill the fuel tank indoors. Wipe up spilled gasoline.
- Wear heavy footwear. Do not operate tractor when barefoot or when wearing open sandals or canvas shoes.
- Disengage all attachments and clutches and shift into neutral before attempting to start engine.
- Do not run the engine indoors. Exhaust fumes are deadly.
- Thoroughly inspect the area where the rotary tiller is to be used and remove wires and other foreign objects which might get tangled on tines.

Operation

- Disengage all clutches and shift into neutral before starting engine.
- Disengage power to rotary tiller when transporting or not in use.
- Stay alert for hidden hazards or traffic when crossing roadways. Do not carry passengers.
- Never operate rotary tiller without guards, plates, or other safety protective devices in place.
- Never allow anyone in back of unit.
- Do not stop or start suddenly on slopes. Till up the face of slopes; never across the face.
- After striking a foreign object, stop the engine, disengage power take-off, and remove ignition key. Thoroughly inspect the rotary tiller for any damage before restarting and operating the rotary tiller.
- When cleaning, repairing, or inspecting, make certain rotary tiller and all moving parts have stopped. Remove ignition key to prevent accidental starting.
- Never attempt to make any adjustments while engine is running.
- Be especially careful not to touch tractor or attachment parts which might be hot from operation. Allow such parts to cool before attempting to maintain, adjust, or service.
- Never operate the rotary tiller without good visibility or light. Always be sure your feet are properly placed on the footrests and keep a firm hold on the steering wheel.
- Stop engine, disengage power take-off, and remove ignition key whenever you leave the operating position and before making repairs, adjustments, or inspections.
- Take all possible precautions when leaving the vehicle unattended. Disengage power take-off, lower the attachment, shift into neutral, set the parking brake, stop the engine, and remove the key.

Maintenance and Storage

- Check belts, nuts, spring clips, etc. at frequent intervals for proper tightness to be sure equipment is in safe working condition.
- Always refer to operator's manual for important details if rotary tiller is to be stored for an extended period.

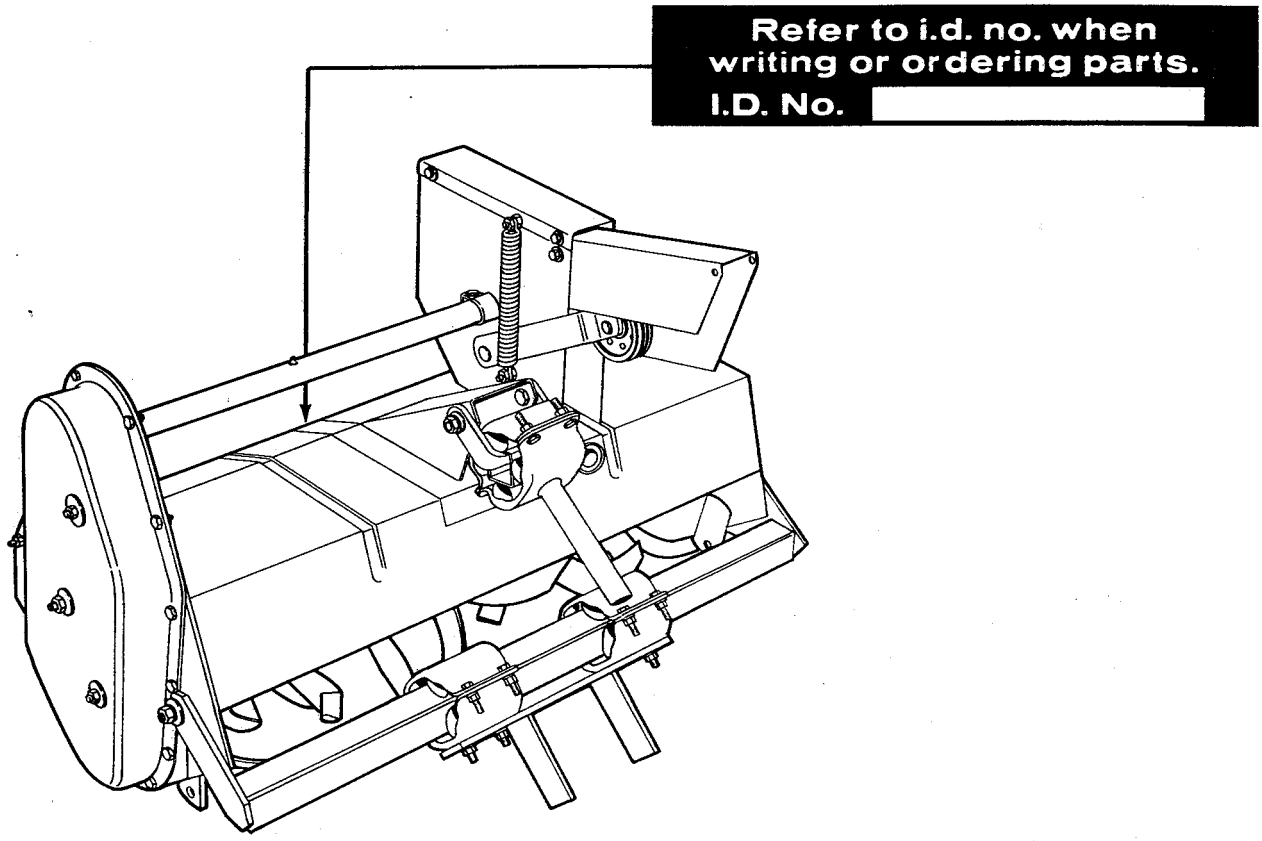
All WARNING, CAUTION and instructional messages on this unit and on your tractor should be carefully read and obeyed. Personal bodily injury can result when the instructions are not followed. The information is for your safety, and is important. The following is on your rotary tiller.

WARNING
MOVING TILLER TINES AND BELT DRIVE MAY CAUSE PERSONAL INJURY.
STAY CLEAR OF TILLER WHEN TRACTOR ENGINE IS RUNNING.
SHUT OFF TRACTOR AND REMOVE KEY BEFORE INSTALLING, SERVICING OR ADJUSTING TILLER.

LOCATION: Two places on top of tiller housing.

Identification

When ordering replacement parts for your rotary tiller, be prepared to give your dealer the identification number found on the identification plate shown below. We suggest that you locate the number and record it here for easy reference.



Accessories and Attachments

There are many accessories or attachments available for your tractor and rotary tiller. See your dealer to purchase the following required or recommended accessories.

REAR LIFT KIT – **REQUIRED** to install rotary tiller.

WHEEL WEIGHTS, FRONT – **REQUIRED** to maintain steering ability when rotary tiller is installed.

WHEEL WEIGHTS, REAR – **RECOMMENDED** for better traction.

ELECTRIC LIFT KIT – **REQUIRED** for use with 38-inch heavy duty rotary tiller. Enables raising and lowering of rotary tiller and other attachments to be done with a flip of a switch.

CHAINS – recommended for better traction, especially in wet soil.

Installation

CONTENT OF SECTION

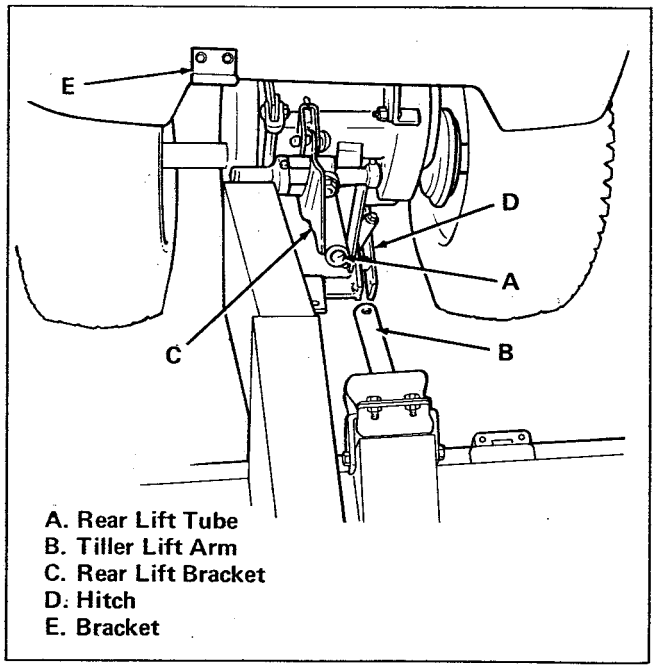
Before it can be used, the rotary tiller must be installed on your tractor. This section tells you how the rotary tiller should be installed. It also tells you how to remove the rotary tiller from the tractor.

REQUIRED ACCESSORIES AND OPTIONS

A rear lift kit is required to mount the tiller on the tractor. Weights for the front wheels of the tractors are required. Weights for the rear wheels are recommended to provide added traction. The front wheel weights are used to improve steering. Because the tiller is heavy, it is also required that the tractor be equipped with an electric lift. All of these items can be procured from your dealer.

INSTALLATION

A bracket (item E, figure 1) and a special lift arm must be assembled onto the tractor before the rotary tiller can be installed. If your tractor is not equipped with a hydrostatic transmission, you also must replace the left-hand pull bar of the hitch (item D). The pull bar, lift arm, and bracket are supplied with the rotary tiller. See the Assembly Section of this manual for instructions.

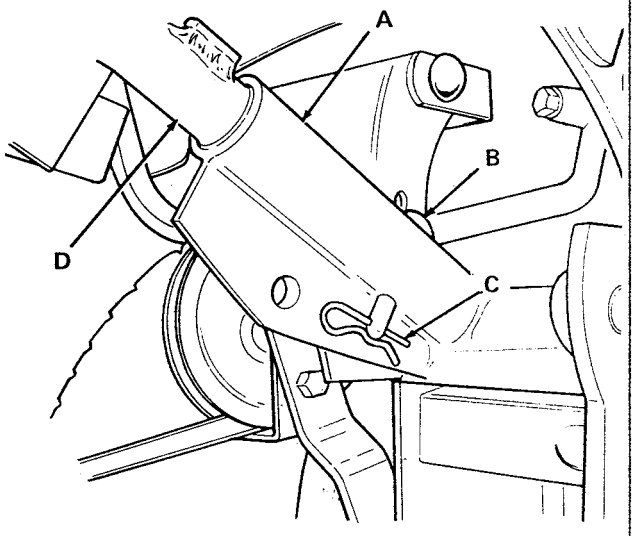


A. Rear Lift Tube
B. Tiller Lift Arm
C. Rear Lift Bracket
D. Hitch
E. Bracket

Figure 1. Position Tractor and Rotary Tiller

Once this assembly is done, the rotary tiller can be installed as follows:

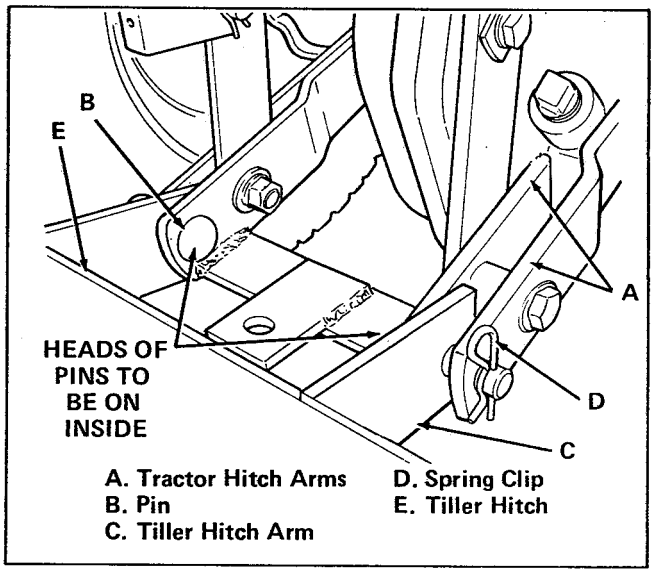
1. Back tractor up to front of tiller so that rear lift kit tube (item A, figure 1) is in line with the tiller lift rod (item B).
2. Be sure that tractor PTO lever is in disengaged position and that tractor lift is fully down. The tractor lift is lowered using the tractor electric lift switch.
3. Stop tractor engine, remove ignition key, and set tractor parking brake.
4. Coat tiller lift rod (item D, figure 2) with thin film of general purpose grease. Tilt rotary tiller forward, inserting tiller lift rod into rear lift tube (item A). These items should fit together easily. If not, slide or rotate tiller slightly to align the two parts.
5. Insert pin (item B) through holes in lift tube and lift rod. Then install a spring clip (item C) through hole in pin.
6. Use electric lift to raise rotary tiller until it is just clear of ground.



A. Rear Lift Tube
B. Pin
C. Spring Clip
D. Tiller Lift Rod

Figure 2. Install Lift Rod in Lift Tube

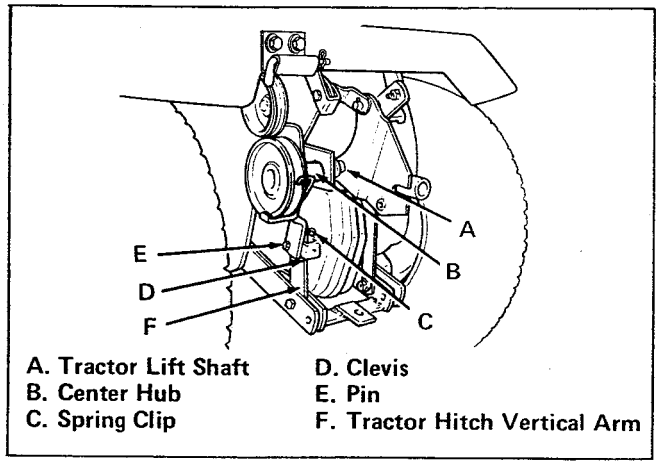
7. Pull lower part of rotary tiller rearward and raise lower hitch (item E, figure 3) so its arms (item C) fit between tractor hitch arms (item A).
8. Insert pins (item B) through holes in tiller and tractor hitches. Then install spring clip (item D) through hole in end of each pin.



A. Tractor Hitch Arms
B. Pin
C. Tiller Hitch Arm
D. Spring Clip
E. Tiller Hitch

Figure 3. Attach Lower Hitch

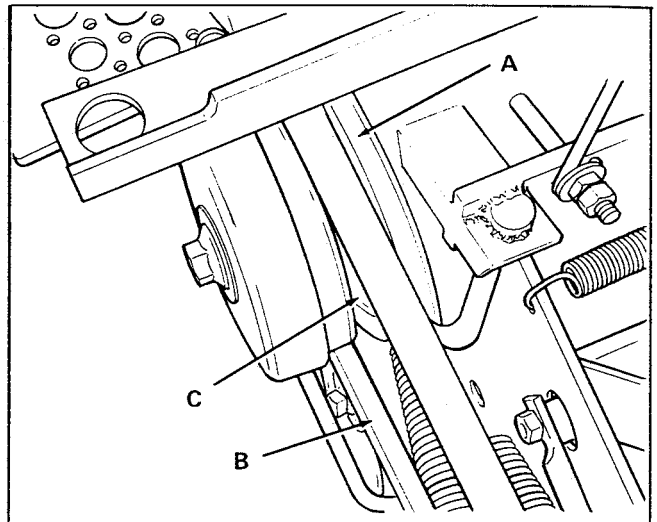
9. While holding lower end of idler arm and belt assembly rearward so clevis (item D, figure 4) clears tractor hitch, slide center tube (item B) onto left end of tractor lift shaft (item A).
10. Rotate lower end of idler arm and belt assembly down so clevis (item D) fits over vertical arm (item F) of tractor hitch.
11. Install pin (item E) through holes of clevis (item D) and tractor hitch (item F). Then install spring clip (item C) through hole in end of pin.



A. Tractor Lift Shaft
B. Center Hub
C. Spring Clip
D. Clevis
E. Pin
F. Tractor Hitch Vertical Arm

Figure 4. Install Idler Arm and Belt Assembly

12. Raise seat deck of tractor. Pull tiller drive belt (item B, figure 5) forward through idler pulleys and slip it into outer groove (item C) of PTO pulley.
13. Lower seat deck of tractor.



A. PTO Pulley
B. Drive Belt
C. Outer Pulley Groove

Figure 5. Install Drive Belt on PTO Pulley

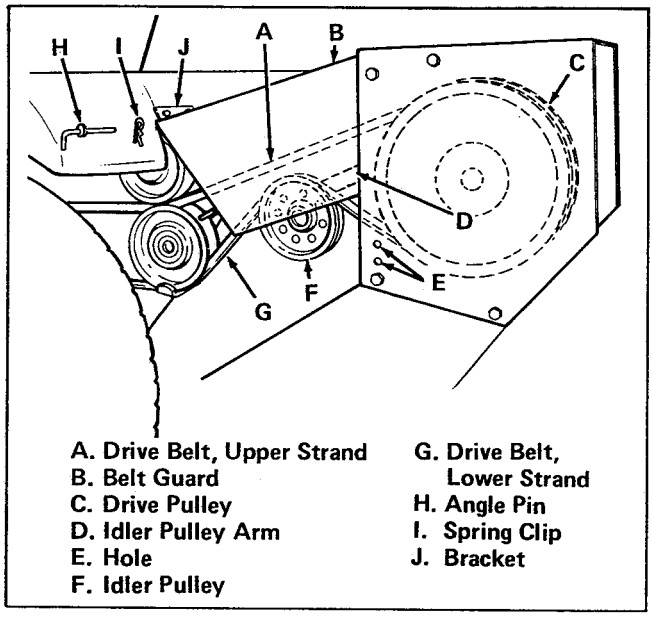
14. Pull drive belt fully rearward and around drive pulley (item C, figure 6). Check drive belt from end to end to be sure that it is not twisted.

⚠ CAUTION

The idler pulley arm (item D) is spring-loaded. For your safety, always install angle pin (item H) as described in step 15 before attempting to install or remove drive belt. If angle pin is installed as a result of a prior installation and removal, omit step 15.

15. Push idler pulley (item F) downward until its arm (item D) is below top set of holes (item E) in drive pulley shield. While holding idler pulley down, install angle pin (item H) through holes to keep idler pulley depressed. Then install spring clip (item I) through hole in angle pin.
16. Slip lower strand (item G) of drive belt over top of idler pulley (item F). Be sure belt is not twisted. Then press downward on idler pulley, remove spring clip and angle pin, and slowly release idler pulley to apply tension to the belt.

17. Now use angle pin (item H) and spring clip (item I) to attach belt guard (item B) to bracket (item J).



A. Drive Belt, Upper Strand
B. Belt Guard
C. Drive Pulley
D. Idler Pulley Arm
E. Hole
F. Idler Pulley
G. Drive Belt, Lower Strand
H. Angle Pin
I. Spring Clip
J. Bracket

Figure 6. Install Drive Belt on Tiller

REMOVAL

To remove the rotary tiller from the tractor proceed as follows:

1. Disengage tractor PTO. Use tractor electric lift switch to fully lower rotary tiller.

⚠ WARNING

Stop engine, remove ignition key and set tractor parking brake before working on or near rotary tiller.

2. Push idler pulley (item F) downward until its arm (item D) is below top set of holes (item E) in drive pulley shield. While holding idler pulley down, install angle pin (item H) through holes to keep idler pulley depressed. Then install spring clip (item I) through hole in angle pin.
3. Slip drive belt (item G) off idler pulley (item F).
4. Remove drive belt from drive pulley (item C) and tractor PTO pulley (item A, figure 5).
5. Remove spring clip and pin (items C and E, figure 4). Rotate clevis (item D) up and rearward and then slide idler arm and belt assembly off tractor. Reinstall pin and spring clip in clevis hole.
6. Remove spring clips and pins (items D and B, figure 3). Push lower hitch (item E) down so it is free of tractor hitch and reinstall pins and spring clips in lower hitch.
7. Remove spring clip and pin (items C and B, figure 2). Tilt upper part of rotary tiller rearward to remove tiller lift rod (item D) from rear lift tube. To prevent loss, reinstall pin and spring clip in hole of tiller lift rod.

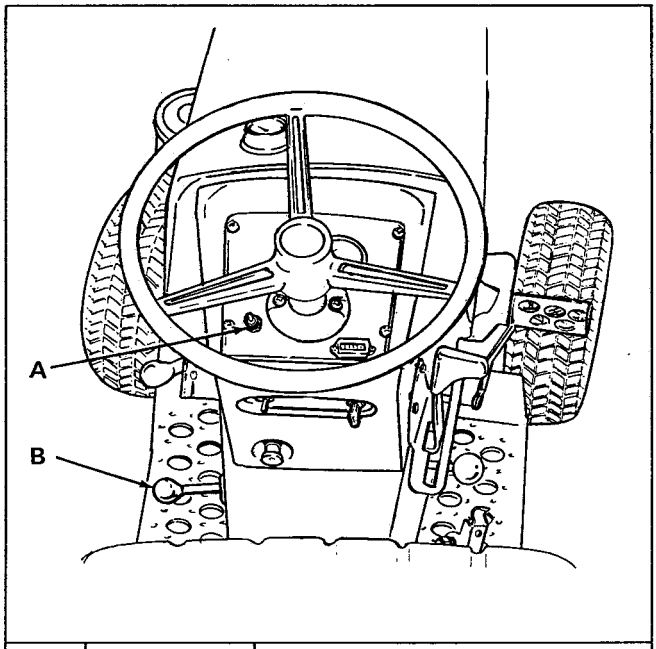
Operation

CONTENT OF SECTION

A brief description of the rotary tiller controls, followed by the basic operating procedures, is given in this section to help you get to know your rotary tiller and how to operate it safely and efficiently.

ROTARY TILLER CONTROLS

The rotary tiller is operated using controls on the tractor. Figure 7 shows the locations, names, and functions of these controls. The control names given in figure 7 are used throughout the manual.



Item	Name	Function
A	Power Lift Switch	Raises rotary tiller to its transport position or lowers it to its tilling position.
B	PTO Lever	Operates PTO clutch. Used to turn rotary tiller on and off.

Figure 7. Locations and Functions of Controls

OPERATING PROCEDURES

The rest of this section tells you how to operate your rotary tiller. The directions assume that both the rotary tiller and tractor work properly. If not, refer to the troubleshooting sections of this manual and the tractor manual.

CHECKS BEFORE STARTING

The checks listed below should be performed before each use of the rotary tiller.

⚠ WARNING

For your personal safety, make sure the PTO lever is disengaged, the engine stopped, and the key removed before attempting to inspect, adjust, or service the rotary tiller.

1. Read this manual. Read the tractor operator's manual. Be sure you know safety precautions and locations and uses of operating controls.
2. Check the rotary tiller to insure that it is properly installed on tractor. Be sure that all safety guards are in place and that all nuts, bolts, and spring clips are secure.
3. Refer to Normal Care section of this manual to determine and perform any needed care for the rotary tiller. Do the same for the tractor.
4. Clear the area you intend to till to be sure that it is free of all items that may be caught in or thrown by the rotary tiller.

TRACTOR AND TILLER OPERATION

The tractor supplies both the power and forward motion for the rotary tiller. Therefore, tractor operation is vital to proper rotary tiller operation. Details for rotary tiller operation are given in paragraphs that follow. Read all of these paragraphs. Then read the general operating procedure for tractor operation with attachments given in the tractor manual before attempting to use the rotary tiller.

Raising or Lowering the Rotary Tiller

Use the power lift switch on the tractor to raise or lower the rotary tiller. When used with the tiller, the electric lift works in reverse. Push the switch forward to its normal up position to lower the rotary tiller. Push the switch rearward to its normal down position to raise the rotary tiller. When tiller is at desired height, simply release the switch. The electric lift holds it in position.

Turning or Backing with Rotary Tiller

Before backing up the tractor or turning the tractor sharply, always raise the tiller until it is clear of the ground. Otherwise, the tiller can be damaged.

Steering with Rotary Tiller Installed

The weight of the rotary tiller behind the tractor reduces weight on the front wheels. Front wheel weights are required to restore the normal turning ability of the tractor. Even with the weights installed, avoid "jack-rabbit" starts and adjust the tractor speed to fit the condition of the surface on which you are traveling.

Transporting the Rotary Tiller

When you use the tractor to transport the rotary tiller to and from work areas, the rotary tiller should be raised. Also be sure the tractor PTO lever is in the disengaged position.

Engine Speed for Tilling

Operate the engine at 3/4 to full speed for tilling. Full engine speed will be necessary when tilling depth and ground conditions require full engine power.

Tractor Speed for Tilling

The tractor speed affects the tilling depth and the size of the soil particles. The best speed is determined by the soil conditions and land contours. For most conditions, 1 mile per hour (1.6 km/h) is a good starting speed. Observe the results at this speed and adjust your speed accordingly. Refer to your tractor manual to determine the transmission gear shift lever or control settings.

⚠ WARNING

After striking a foreign object, stop the engine, disengage PTO, and remove ignition key. Thoroughly inspect the rotary tiller for any damage before restarting and operating the rotary tiller.

Stopping the Rotary Tiller

To stop the rotary tiller while it is in operation, simply move tractor PTO lever to its disengaged position. Do this immediately if you even suspect that the tines are striking rocks.

⚠ CAUTION

For your personal safety, be aware that tiller does not disengage when tractor clutch is depressed. The tiller is disengaged with the tractor PTO clutch lever (item B, figure 7).

Starting the Rotary Tiller

⚠ CAUTION

For your personal safety, be aware that tiller may propel the tractor forward when lowered into hard soil or sod. To stop motion in such cases, tiller must be disengaged.

Start the rotary tiller while it is raised to the transport position. Do this by moving the PTO lever to the engaged position. Then lower the tiller to the ground slowly and allow it to dig down to the desired depth before starting the tractor into motion.

⚠ WARNING

For your personal safety, never attempt to operate the rotary tiller on steep slopes. Always till up the face of slopes, and never across the face. Avoid tilling downhill on inclines as the tiller may push the tractor faster than normal speeds. Never operate the rotary tiller on slopes greater than 27 percent (15 degrees).

Tilling Patterns

Determine the best pattern before you start. Consider the size and shape of the area to be tilled. The locations of fences or buildings can also affect the pattern.

Usually, it is best to drive back and forth the long direction of the area. By making fewer turns, you can get the job done faster. However, after each pass, you can also back the tractor up after raising and disengaging the tiller. Because it is easy to reverse tractor direction, this method is especially good if your tractor has a hydrostatic transmission.

Whenever possible, plan your pattern so the previously tilled soil is to the right of the tractor. Otherwise, the chain case on the right side of the

tiller may ride on the soil surface, reducing tilling depth or creating drag that causes wheel spinning.

For fine seedbed soil, till the area in one direction, then till again at right angles.

Tilling Depth

You will want to till to a depth that suits the seed you will plant. As a rule, till at least 2 inches (50 mm) deeper than the normal planting depth for the seed. The usual planting depth for corn, as an example, is 2 to 3 inches (50 to 76 mm). Using the rule above for this example, till the soil to a depth of 5 inches (127 mm) or more.

If you till too deeply in a single pass, the soil texture will be coarse. This problem can be avoided by making a number of passes over the same area. Till to a shallow depth on the first pass. Then increase the depth on each additional pass until the seedbed has the proper depth and texture.

To control the tilling depth, raise or lower the rotary tiller by adjusting the skid shoes (item A, figure 8). Make this adjustment as follows:

NOTE

If skid shoes plow soft soil so much that they stop tractor, they can be removed completely.

1. Stop tractor, set parking brake, and be sure tractor PTO lever is in disengaged position.
2. Raise rotary tiller to its transport position.
3. Stop engine and remove ignition key.
4. Remove spring clip and pin (item B) and slide skid shoe up or down to desired height. Then reinstall pin and spring clip to secure skid shoe. Be sure both skid shoes are set to same height.

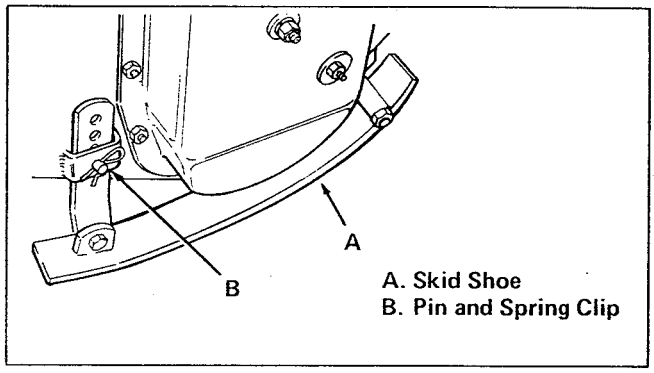


Figure 8. Skid Shoes

Soil Conditions

Avoid tilling soils that are too wet or too dry. Tilling wet, muddy soil is especially bad. Such soil will ball, leaving chunks that harden as they dry. Mud can also collect on the tines, drive shaft, and belts and thereby cause equipment damage.

Normal Care

CONTENT OF SECTION

Your rotary tiller was designed and built to provide years of service with only minor care. This care, however, must be performed to keep it in good operating condition and to avoid costly repairs. This section shows you how to provide the necessary care.

SCHEDULED CARE

The only care required for the rotary tiller on a regularly scheduled basis is lubrication. The rotary tiller must be lubricated as shown in figures 9 and 10 before the first use and after every 8 and 25 hours of operation.

A Maintenance Record (figure 11) is provided to help you document all operating hours and maintenance repair actions.

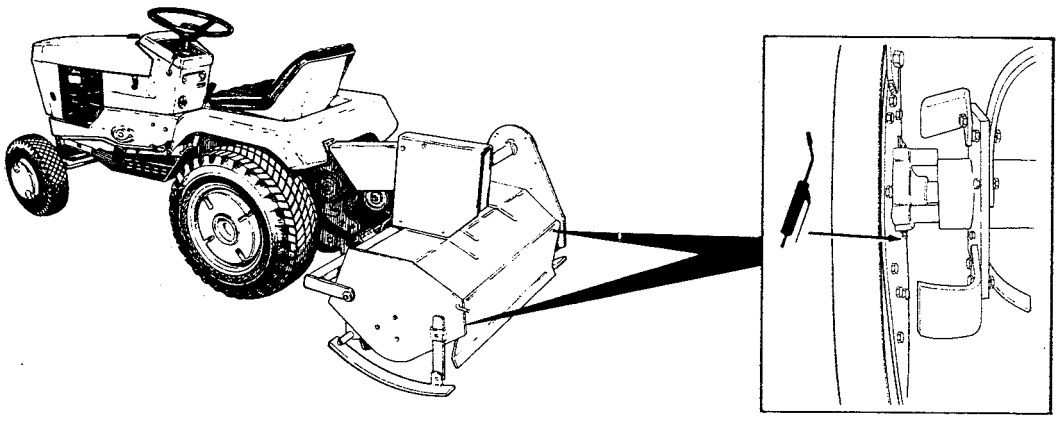
NORMAL STORAGE

To protect your rotary tiller, store it in an enclosed, dry area. Clean the tines and body of the rotary tiller to remove excess dirt and plant matter. This can be done easily with a hose.

OFF-SEASON STORAGE

When the rotary tiller is to be stored for 30 days or more, take precautions as follows:

1. Remove rotary tiller from tractor.
2. Clean the entire tiller, including the tine assemblies.
3. Coat the tines with a light film of grease or oil. Coat all other bare metal surfaces with a good quality paint (obtainable from your dealer) or a light film of grease or oil.
4. Lubricate rotary tiller. (See figures 9 and 10.)

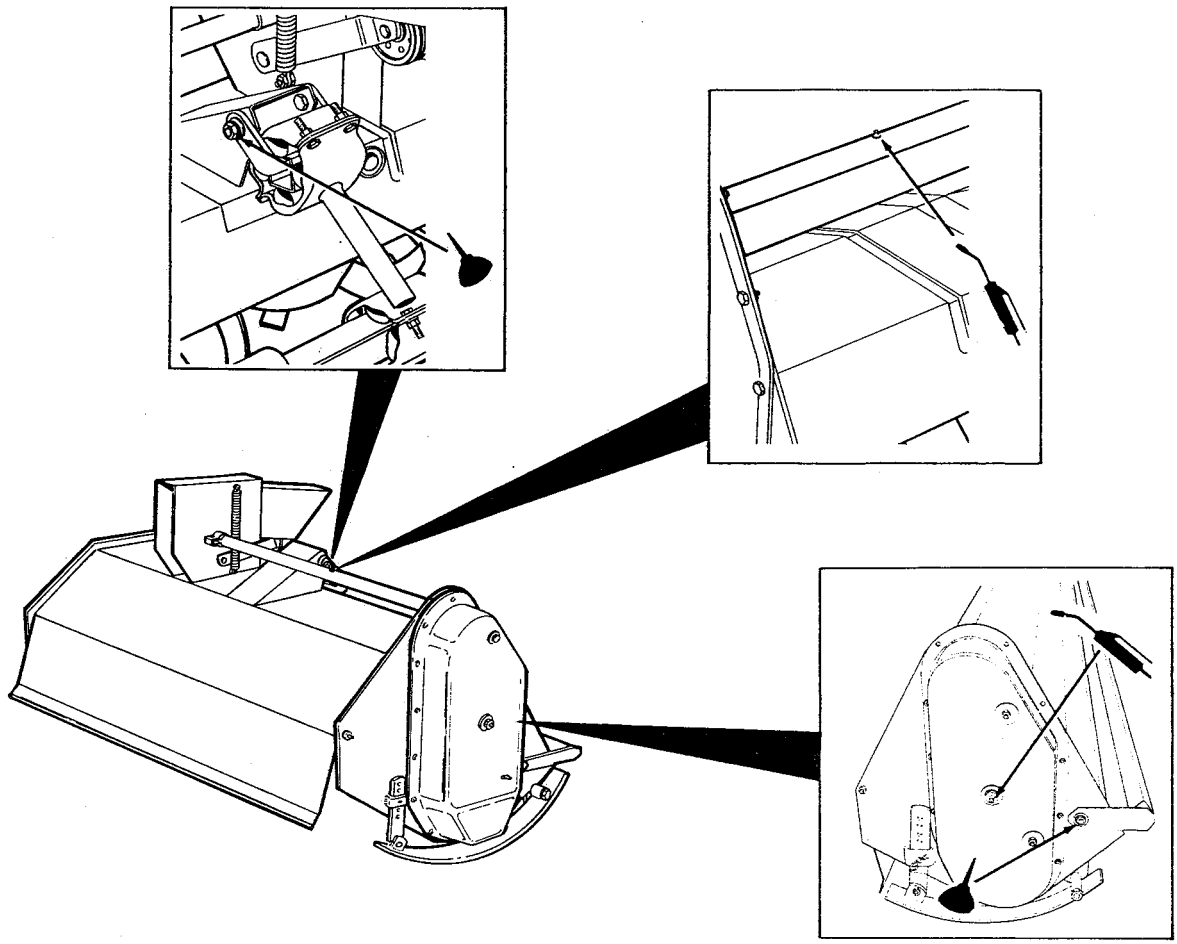


NOTE

Keep grease and oil off belts and pulleys.

Symbol	Use	Apply With	Procedure
	Lithium base automotive grease.	Grease gun	1. Wipe fitting clean with rag. 2. Apply 2 or 3 shots of grease. 3. Wipe up any excess grease.

Figure 9. Lubricate Tine Shaft Bearings (Every 8 Hours)



NOTE

Keep grease and oil off belts and pulleys.

Symbol	Use	Apply With	Procedure
	Lithium base automotive grease.	Grease gun	1. Wipe fitting clean with rag. 2. Apply 2 or 3 shots of grease. 3. Wipe up any excess grease.
	SAE 30 oil	Oil can	Clean indicated area and apply 2 or 3 drops of oil.

Figure 10. Lubricate Rotary Tiller (Every 25 Hours)

Maintenance Record

Date	Hours Used	Lubrication	Maintenance/Repair

Figure 11. Maintenance Record

Troubleshooting

CONTENT OF SECTION

This section of the manual tells you how to troubleshoot some of the more common and easily corrected rotary tiller problems. The same type of data for the tractor can be found in your tractor owner's manual. For problems not covered in these manuals, it is recommended that you contact your dealer.

TROUBLESHOOTING PROCEDURES

Troubleshooting procedures are provided in figure 12. To use these procedures, first locate the problem description that best describes the trouble that you have encountered. Check the possible causes one at a time in the order that they are listed. Correct any problems that are found and try to operate the rotary tiller again to see if you have eliminated the trouble.

⚠ WARNING

For your safety, do not try to adjust or repair the tractor or rotary tiller while the engine is running. Also, always remove the key from the ignition switch before beginning the maintenance to prevent accidental starting of the engine.

Problem	Cause/Remedy
1. Rotary tiller tines do not rotate.	A. PTO lever not engaged. Engage PTO lever. B. Tiller drive belt slips. Check tines and remove any wire, etc. that is binding tines. If problem persists, check for broken tiller idler pulley spring. Replace it if necessary. Otherwise, check and adjust tractor PTO. C. Rotary tiller drive belt or chain broken. Replace as needed. D. Drive belt or pulleys oily. Clean as required.
2. Tills too shallow.	A. Tiller raised too high. Lower it using tractor lift. B. Skid shoes set wrong. Raise skid shoes. C. Engine speed too slow. Set engine for 3/4 to full speed. D. Tractor speed too fast. Use slower speed. E. Ground too hard. Make several passes, tilling deeper on each pass.
3. Tiller leaves ground rough with large clods.	A. Ground too wet. Wait until soil does not ball up when rolled in your hand. B. Tilling too deep at one pass. C. Tractor speed too fast. Set transmission gear shift or control for slower speed.
4. Tractor handles poorly.	A. Tractor speed too fast. Use slower speed, especially when running on rough or sloping surfaces. B. Front wheels lifting. Clean dirt from tiller. C. Rear wheels slip. Use chains or wait for dry conditions. D. Tiller propels tractor. See causes for problem 3 above.

Figure 12. Troubleshooting Procedures

TINE REPLACEMENT

When required because of wear or breakage, replace a tine as follows:

1. Remove two capscrews (item A, figure 13) and locknuts (item B).
2. Remove old tine (item C) from tiller.
3. Place new tine on mounting plate (item D). Be sure tine curves away from mounting plate with its sharp edge facing rearward when tine nears bottom of travel.
4. Insert two capscrews (item A) through tine and then through mounting plate. Install and tighten locknuts (item B) to a torque of 30 foot-pounds (40 N·m).

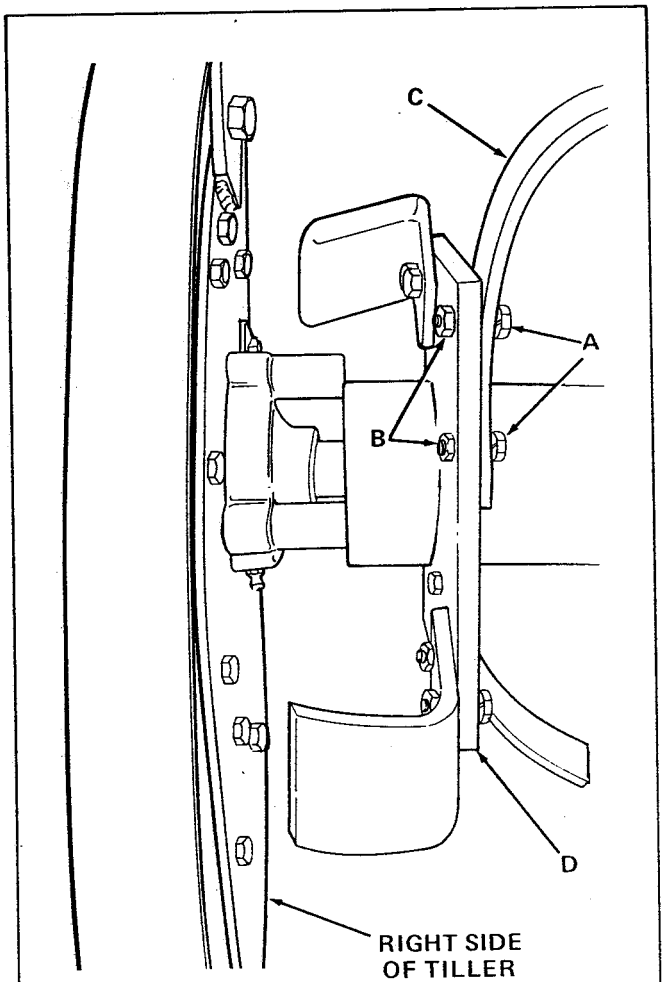


Figure 13. Tine Replacement

CHAIN REPLACEMENT

When a chain breaks or becomes so loose that the chain tension adjustment cannot be performed, replace the chains as follows:

1. Remove two large nuts and one capscrew with grease fitting from face of chain cover (figure 16).
2. Remove 12 locknuts and 1 taptite capscrew that secure outer edge of chain cover. Then remove chain cover, taking care to prevent damage to gasket (item A, figure 14).
3. Remove both chains (items D and E). Keep chains and other hardware separated so they can be identified during installation.
4. Clean all old grease from sprockets, tiller end plate, and chain cover.
5. Check rollers (item B) and gasket (item A). Replace these items if they are worn or damaged. Also be sure that two setscrews (item C) are tight.
6. Install new drive chains. The lower chain (item D) must be installed first.
7. Cover drive chains with a thick coating of general purpose automotive grease. Pack about 2 pounds (1 kg) of this grease in bottom of chain cover.
8. Install chain cover and secure it by installing and tightening the 12 locknuts and 1 taptite capscrew around the cover edges.
9. Install and tighten capscrew with grease fitting in center hole of chain cover.
10. Install large flat washers and nuts on the two chain roller capscrews protruding through

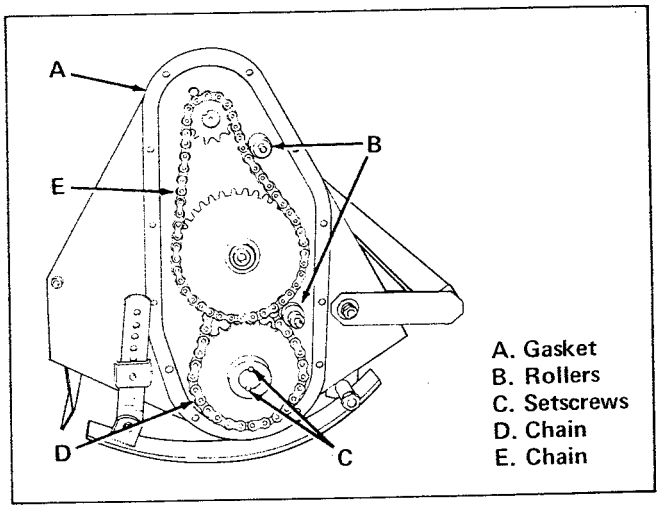


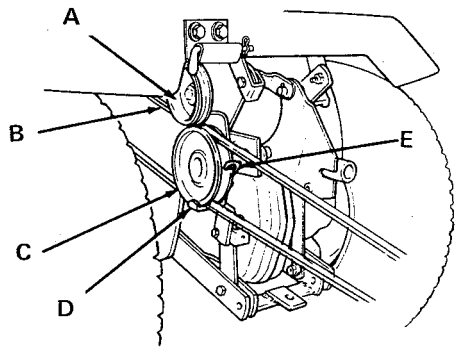
Figure 14. Chain Replacement

chain cover. Finger tighten nuts. Then perform chain tension adjustment. (See Adjustment Section.)

DRIVE BELT REPLACEMENT

When needed, replace the rotary tiller drive belt as follows:

1. Remove tiller drive belt from tiller and PTO pulley as you would for rotary tiller removal.
2. Loosen bolt that secures belt guard (item D, figure 15) and groove cleaner (item E).
3. Remove idler pulley (item A).
4. Remove and replace tiller drive belt (item B).
5. Reinstall idler pulley (item A), but do not tighten nut yet.
6. Adjust idler pulley and groove cleaner as detailed in Adjustment Section.



A. Backside Idler Pulley
B. Drive Belt
C. Grooved Pulley
D. Belt Guard
E. Groove Cleaner

Figure 15. Drive Belt Replacement

Adjustments

CONTENT OF SECTION

This section tells you how to adjust the rotary tiller to keep it operating efficiently. Normally, the adjustment procedures should be performed only to correct problems.

⚠ WARNING

To avoid serious injury, perform adjustment procedures only when the tractor engine is stopped. Always remove the ignition key before beginning the adjustment procedures to prevent accidental starting of the engine.

ADJUSTMENT PROCEDURES

Backside Idler Pulley

The backside idler pulley (item A, figure 15) must be adjusted to keep the drive belt in the grooved pulley (item C). Adjust this pulley as follows:

1. Loosen nut that secures backside idler pulley (item A).
2. Slide backside idler pulley down to grooved pulley (item C) until the two pulleys almost touch. The gap between the nearest parts of the two pulleys should be at least 1/32 inch (0.8 mm).
3. Retighten nut to secure backside idler pulley in position.

Groove Cleaner

The groove cleaner (item E, figure 15) must be adjusted to keep the grooved pulley (item C) free of stones and dirt. Adjust the groove cleaner as follows:

1. Be sure rotary tiller is fully lowered.
2. Loosen bolt that secures belt guard (item D) and groove cleaner (item E).
3. Adjust position of groove cleaner so it just touches the hub of the grooved pulley from below.
4. Be sure guard (item D) is still in position to keep belt in grooved pulley. Then retighten nut to secure guard and groove cleaner in place.
5. Now check position of groove cleaner with tiller fully raised. Repeat steps 1 through 4 as needed to provide best cleaning without having groove cleaner touch the belt when the tiller is fully raised or lowered.

Chain Tension

The capscrews which hold the chain tension rollers are mounted in slots (item B, figure 16). Because the rollers wear with use, the capscrew positions must be adjusted to maintain chain tension. Once a year, or more often if the tiller is used for commercial purposes, adjust the chain tension as follows:

1. Loosen, but do not remove, nut (item A).
2. Use two box wrenches as shown to hold the nut and its capscrew. Push both box wrenches to the rear as you retighten the nut.
3. Repeat this procedure for the nut over the slotted hole (item B).

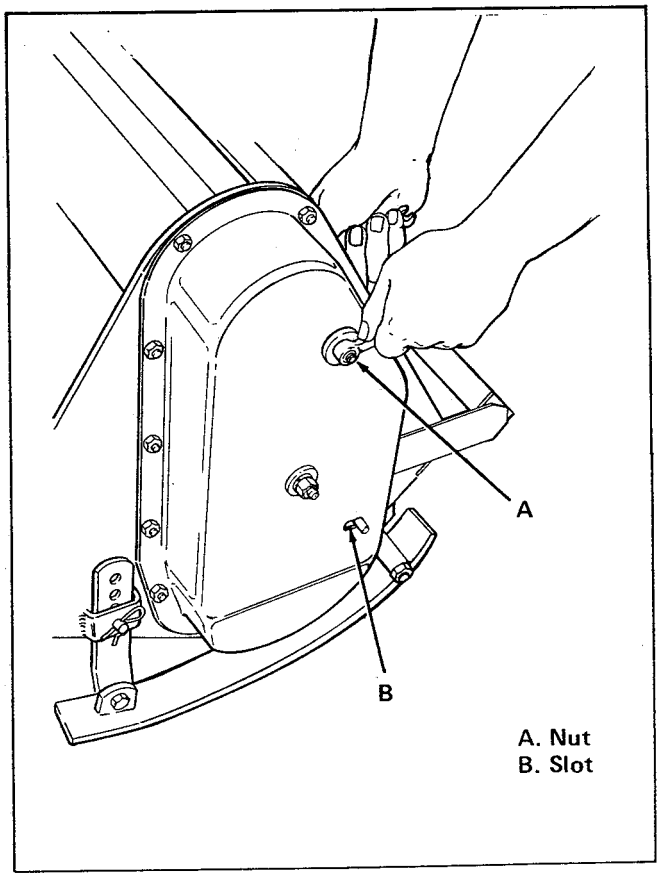


Figure 16. Chain Tension Adjustment

Assembly

CONTENT OF SECTION

The tiller should be received with loose parts that must be assembled onto the tractor. This section tells you how to install these parts.

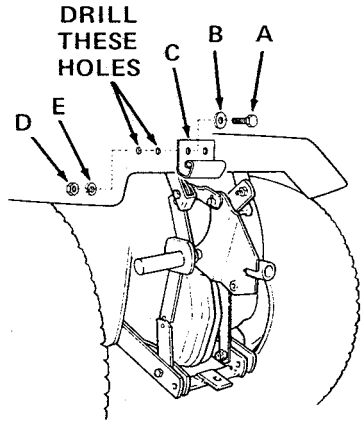
⚠ WARNING

Stop engine, remove ignition key, and set tractor parking brake before beginning assembly procedure.

BRACKET INSTALLATION

Before you can install the rotary tiller on your tractor for the first time, it is necessary to assemble a bracket to the seat deck of the tractor. Assemble this bracket as follows:

1. Cut out template provided at the back of this manual.
2. Tape template to rear of seat deck, matching template curve to left-hand curve of seat deck.
3. Using a center punch, mark seat deck at center points of the two holes shown on template. Then use a 11/32-inch (8.8 mm) bit to drill the two holes through the seat deck.
4. Remove template from seat deck.
5. Attach bracket (item C, figure 17) to seat deck. Use two capscrews (item A), flat washers (item B), lockwashers (item E), and nuts (item D) to secure bracket in place.



A. Capscrew
B. Flat Washer
C. Bracket
D. Nut
E. Lockwasher

Figure 17. Bracket Assembly

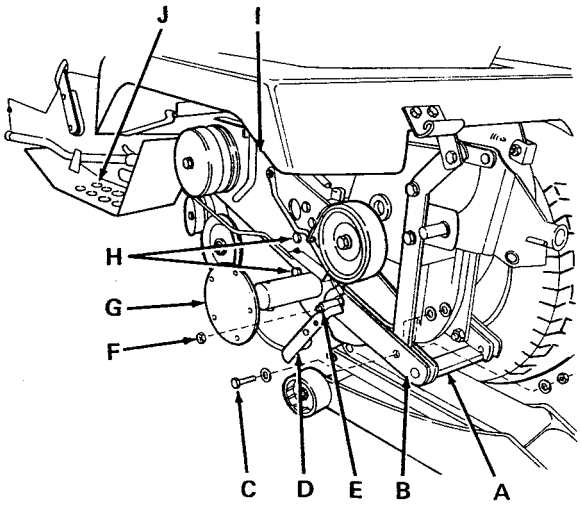
PULL BAR REPLACEMENT

On tractors with three-, four-, or six-speed transmissions, a single stud secures the left pull bar (item B, figure 18) to the transmission. To obtain the required strength, a new pull bar which fastens to the transmission in three places is supplied with the rotary tiller. Replace the existing pull bar with the new pull bar as follows:

⚠ WARNING

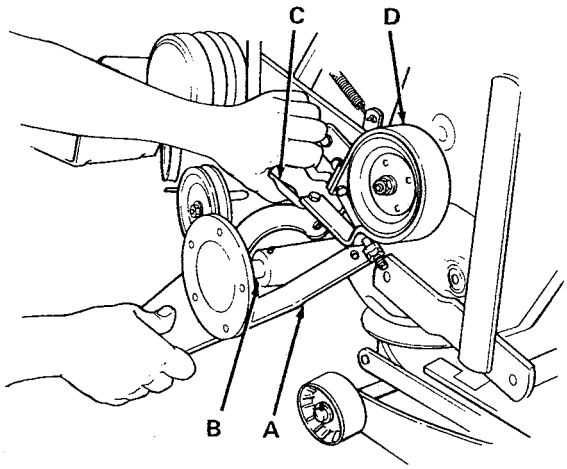
Place blocks before and behind both front wheels to prevent tractor movement before jacking the rear of the tractor. Also place a jack stand under the left footrest (item J) to keep the tractor raised. Do not rely on the jack to keep the tractor up while you are working on it.

1. Raise left rear wheel off ground. Place jack under transmission to raise tractor; place jack stand under left footrest (item J) to keep tractor raised.
2. Remove five hub bolts and slip wheel and tire assembly off hub (item G).
3. Push lever (item D) down and forward to release spring tension.
4. Remove locknut (item F) and slip lever (item D) off its mounting stud. Then remove mounting stud (item E).
5. Remove capscrew (item C), nut, and washers that secure pull bar (item B) to draw bar (item A). Discard pull bar, but retain hardware for mounting of new pull bar.
6. Remove two capscrews (item H) with lockwashers that secure side plate (item I) to transmission. Discard capscrews, but save lockwashers for later use.
7. Slip large hole in pull bar (item A, figure 19) over narrowest part of axle (item B). Then slide pull bar along axle toward transmission.
8. Hold brake linkage (item C) up as shown and slide pull bar under linkage and brake drum (item D). Then rotate pull bar counterclockwise so slot is facing forward.



A. Draw Bar
B. Pull Bar
C. Capscrew
D. Lever
E. Stud
F. Locknut
G. Hub
H. Capscrew
I. Side Plate
J. Left Footrest

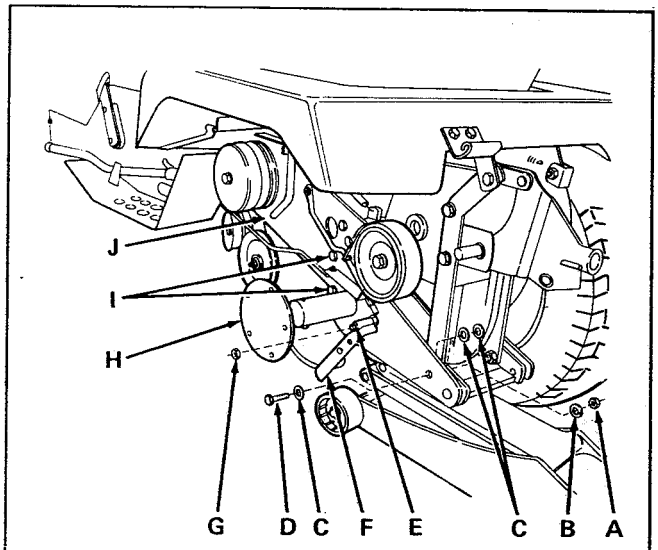
Figure 18. Remove Old Pull Bar



A. Pull Bar
B. Axle
C. Brake Linkage
D. Brake Drum

Figure 19. Slide New Pull Bar on Axle

9. Place lockwashers removed in step 6 over two capscrews 7/16 x 1-1/4 inch (11 x 32 mm) provided with rotary tiller. Then install these capscrews fingertight (item I, figure 20) through holes in pull bar and side plate (item J) and into threaded holes of transmission.
10. Thread shorter end of stud (item E) through center hole of pull bar into threaded hole of transmission.
11. Install capscrew (item D), flat washers (item C), lockwasher (item B), and nut (item A).
12. Now torque capscrews (item I) to 50 Ft. Lbs. (168 N·m) and tighten stud (item E) and nut (item A).
13. Slide lever (item F) over stud. Then install locknut (item G). Do not over-tighten locknut or you will not be able to operate lever.
14. Pull lever up and back to its normal position.
15. Place wheel and tire assembly on hub (item H) and reinstall and tighten five hub bolts.



A. Nut
B. Lockwasher
C. Flat Washers
D. Capscrew
E. Stud
F. Lever
G. Locknut
H. Hub
I. Capscrews
J. Side Plate

Figure 20. Secure New Pull Bar

LIFT ARM INSTALLATION

A special lift arm (item E, figure 21) must be installed on the tractor lift shaft (item G). The tractor lift shaft is located on the underside of the tractor frame just behind the engine. Install the special lift arm as follows:

1. Operate electric lift to fully lower tractor lift shaft. Pointer attached to left end of lift shaft outside tractor frame (item D) should be fully rearward.
2. Remove pulley, if one is present, from brackets (item A). Bolt and spacer are used again.
3. Slide special lift arm (item E) over lift shaft brackets nearest left side of tractor. Special lift arm must be positioned as shown with curved lift plate (item H) at top rear.
4. Secure special lift arm to lift shaft by installing capscrew (item F), lockwasher, and nut.
5. Pull rear lift cable (item B) forward through brackets (item A) and attach it to top of special lift arm using a spring clip and pin (item C).

⚠ CAUTION

When special lift arm is installed, rear-mounted attachments such as the heavy duty rotary tiller move in the opposite direction of mid- or front-mounted attachments. That is, operating the electric lift to raise other attachments will lower rear-mounted attachments. For your personal safety, remove other attachments and keep them off the tractor while rear-mounted attachments are installed.

6. Reinstall capscrew, spacer, and locknut in brackets (item A) if removed in step 2. If not, they are supplied with the Rear Lift Kit.

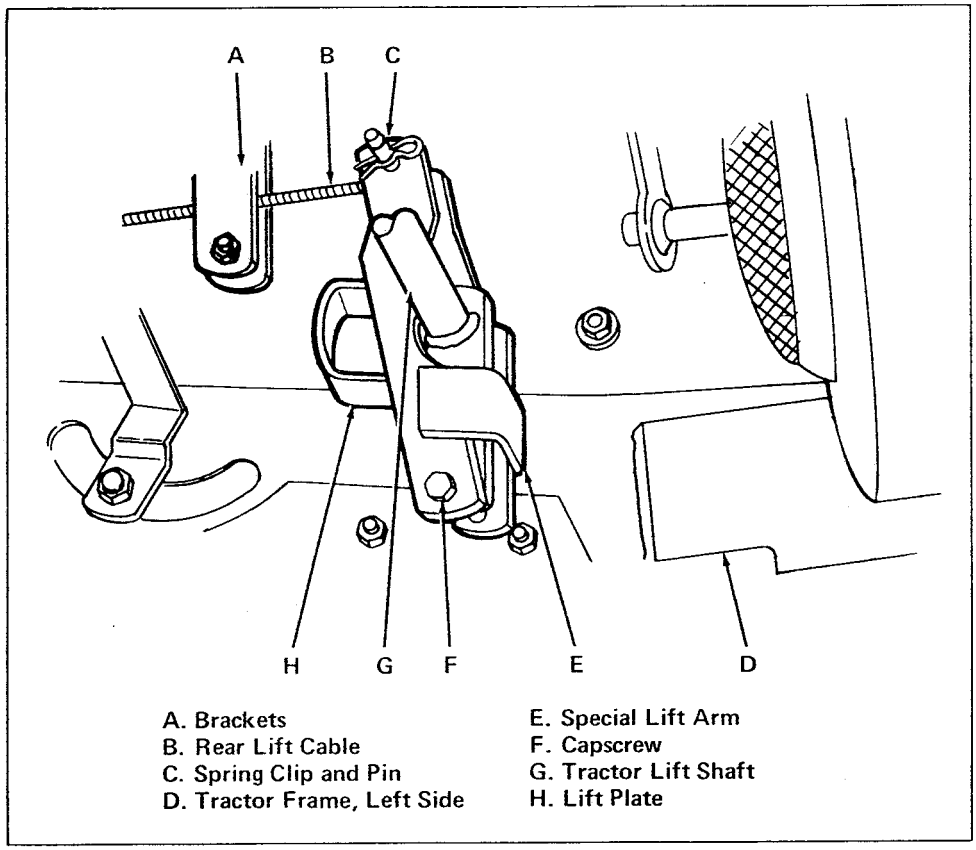
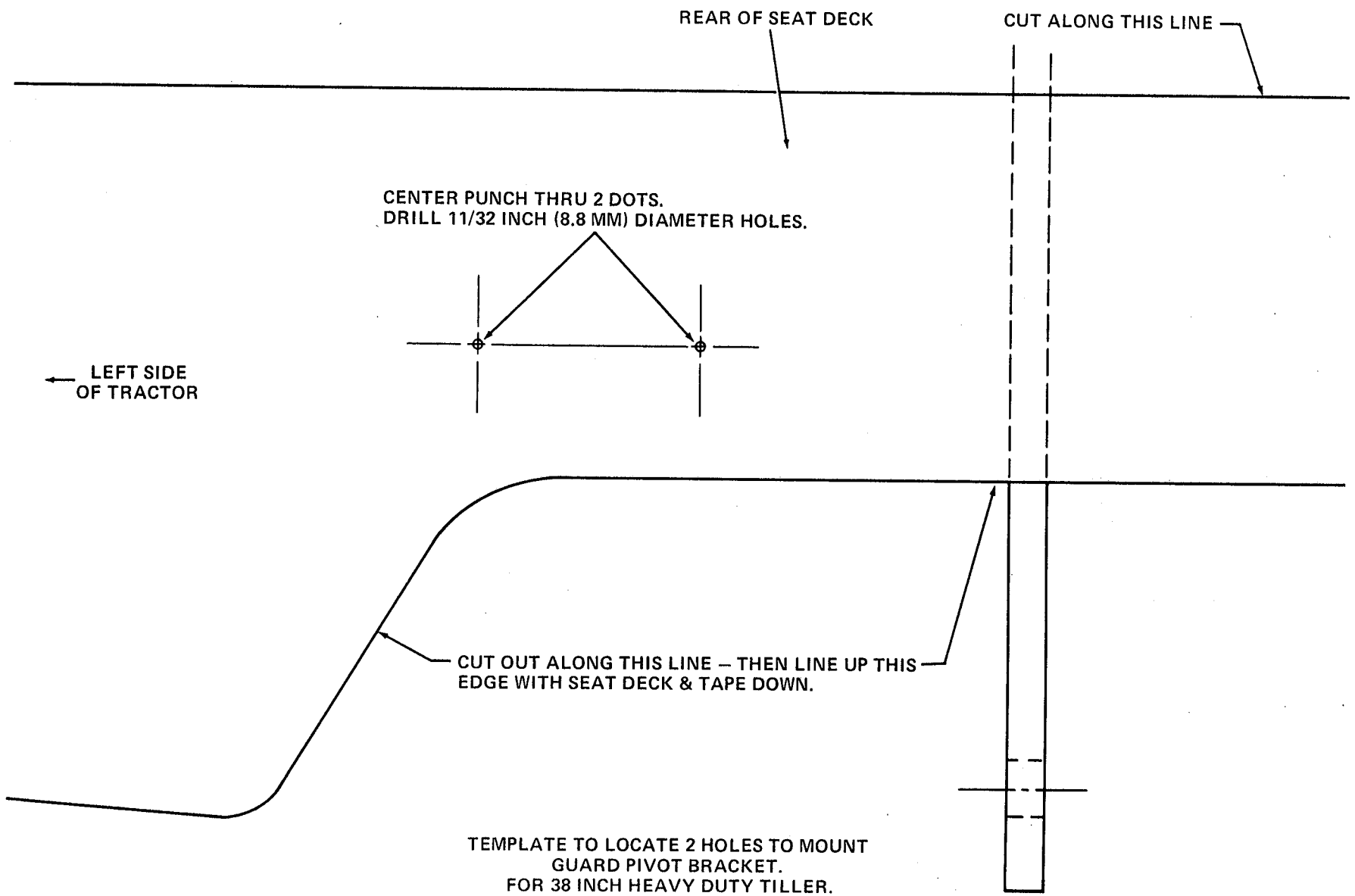


Figure 21. Install Special Lift Arm on Tractor Lift Shaft

NOTE

Later model tractors already have the lift arm installed.

NOTES


REAR OF SEAT DECK
CUT ALONG THIS LINE
CENTER PUNCH THRU 2 DOTS.
DRILL 11/32 INCH (8.8 MM) DIAMETER HOLES.
LEFT SIDE
OF TRACTOR
CUT OUT ALONG THIS LINE – THEN LINE UP THIS
EDGE WITH SEAT DECK & TAPE DOWN.
TEMPLATE TO LOCATE 2 HOLES TO MOUNT
GUARD PIVOT BRACKET.
FOR 38 INCH HEAVY DUTY TILLER.